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Not Just Fun and Games: A Review of College Drinking Games Research From 2004 to 2013

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Abstract

Drinking games are a high-risk social drinking activity consisting of rules and guidelines that determine when and how much to drink (Polizzotto et al., 2007). Borsari's (2004) seminal review paper on drinking games in the college environment succinctly captured the published literature as of February 2004. However, research on college drinking games has grown exponentially during the last decade, necessitating an updated review of the literature. This review provides an in-depth summary and synthesis of current drinking games research (e.g., characteristics of drinking games, and behavioral, demographic, social, and psychological influences on participation) and suggests several promising areas for future drinking games research. This review is intended to foster a better understanding of drinking game behaviors among college students and improve efforts to reduce the negative impact of this practice on college campuses.

Keywords

drinking games; alcohol-related problems; prevention; intervention; college students

Drinking games participation is prevalent among college students (rates are as high as 91% among drinkers; see Table 1). There are hundreds of different types of drinking games with varied rules, characteristics, and patterns of alcohol consumption. Currently, there is no standard definition of “drinking games.” However, a common conceptualization is that drinking games are (a) social drinking events that are (b) played according to a specific set of rules that specify when and how much players should drink, (c) designed to promote the rapid consumption of large amounts of alcohol to facilitate inebriation, and (d) involve performing a cognitive and/or motor task (Zamboanga et al., 2013). Drinking games are different from, but may occur alongside, other types of high-risk drinking activities like pregaming (aka “prepartying” or “front-loading,” that is, consuming alcohol before going to a social gathering or event; Borsari et al., 2007). Involvement in drinking games has also been linked to serious negative drinking consequences among college students (e.g., Alfonso & Deschenes, 2013; Grossbard, Geisner, Neighbors, Kilmer, & Larimer, 2007; Polizzotto, Saw, Tjhung, Chua, & Stockwell, 2007; Zamboanga, Leitkowski, Rodriguez, & Cascio, 2006).

Borsari's (2004) seminal review article on drinking games in the college environment succinctly discussed the studies published as of February 2004. However, over 40 empirical articles on drinking games among college students have been published in refereed journals since 2004 (see Table 1). Since Borsari's (2004) review, there has been a brief review (Ahern & Sole, 2010a), commentaries (Ahern & Sole, 2010b; Durkin, 2008), an ethnology (Chau, 2006), and an encyclopedia entry (Kenney, LaBrie, & Hummer, 2012) on drinking games; all summarize valuable information on college drinking games research, yet were written with specific audiences in mind and, as such, are not comprehensive. Therefore, an updated review is required to (a) provide an overview and synthesis of current drinking games research, and (b) identify promising areas for future drinking games research (Figure 1 depicts the conceptual organization of the present review).

Selection of Articles for Review

To identify manuscripts for inclusion, we searched (until January 2014) Web of Science, PsycNet (a database that accesses information contained within PsycInfo, PsycArticles, PsycBooks, PsycExtra, and PsycTests), PubMed, and Google Scholar for refereed articles published after 2003 using the following combinations of keywords: drinking game, game, alcohol, alcohol use, and college students. Because there is significant overlap in the drinking games and pregaming literature, we also searched for articles with the word pregaming in the title or keywords. Additionally, we consulted with prominent alcohol researchers to identify further studies that may have not yet appeared in online databases. We included articles that assessed drinking games as part of the study analyses, even if they were not the primary focus of the article (e.g., Clapp, Ketchie, et al., 2008; Clapp, Min, Shillington, Reed, & Ketchie Croff, 2008). Studies that used measures of drinking games as

part of broader constructs or that mentioned, but did not assess, drinking games were excluded.

Review of Current Literature

Characteristics of Drinking Games

Categories of different types of drinking games—For years, researchers have tried to categorize drinking games in a systematic and coherent manner. Relying on informal descriptions of game features, Borsari (2004) classified drinking games according to the following categories: motor skill, verbal, gambling, media, team and consumption games. Polizzotto et al. (2007) and LaBrie, Ehret, and Hummer (2013) provide examples of how researchers might empirically categorize drinking games. Based on interviews with Australian college students, Polizzotto et al. (2007) categorized drinking games along two dimensions: (a) competitive versus noncompetitive, and (b) skill-based versus chance-based. Students reported participating in skill-based competitive games (e.g., coin-based drinking games; for instance, in Anchorman, each player on a team attempts to get a quarter into a pitcher of beer, and the losing team drinks the beer in the pitcher) and competitive games that did not require skill (e.g., Centurion, where players drink a glass of beer or soda that contains alcohol, per minute for 100 min). The authors noted that competitive games that do not require skill typically involve drinking the most or fastest in a short time period and are therefore the most hazardous games. Finally, there are drinking games that are not competitive and do not require much skill; instead, external cues dictate participants' alcohol consumption (e.g., media games, such as drinking each time a TV character says a certain word or phrase).

More recently, LaBrie et al. (2013) systematically categorized 100 drinking games according to the drinking behavior that results from the specific rules of each game. Based on their qualitative analyses, the authors derived five distinct drinking game categories. In even competition games, players or teams alternate turns, with the goal of making the losing player or team drink. Targeted and skills games typically require some skill or strategy so that participants can make certain that other players drink and/or avoid having to drink themselves (e.g., the loser must drink or the winner selects someone to drink). Communal games have no official winner or loser; instead, participants agree on a set of rules that dictate when and how much to drink (e.g., players drink each time the name Roxanne is mentioned in the song "Roxanne"). Chance games do not involve any (or minimal) skill or strategy; instead, the roll of a die or random drawing of a card determines who, when, and how much to drink. Finally, extreme consumption games¹ often lack rules and involve high-volume drinking (e.g., Chugging, Keg Stands).

¹College students tend to perceive extreme consumption games as a type of drinking game (LaBrie et al., 2013; Zamboanga et al., 2006), and they are often framed as such. However, we acknowledge the possibility that some students might not view such activities as drinking games (see Zamboanga et al., 2013, for discussion on extreme consumption games). For instance, one of the criteria for drinking games is that they involve performing a cognitive and/or motor task while playing. Because extreme consumption games tend to simply involve drinking significant amounts of alcohol very quickly, with little skill involved, some students may not view this activity as a drinking game so much as they do a style or type of alcohol consumption.

Popularity of certain types of drinking games—Depending on how games are categorized and the population that is being surveyed, studies have identified varying degrees of popularity across drinking games among students. LaBrie et al. (2013) found that even-competition games were the most popular, followed by chance and targeted games, whereas extreme consumption and communal games were the least popular. Cameron et al. (2010) found that more students played team and skill games than unity (i.e., games that emphasize group bonding without competition), consumption, and IQ games (i.e., games that require quick recall of words, numbers, or facts). Zamboanga et al. (2006; Zamboanga, Calvert, O'Riordan, & McCollum, 2007) found that the two most popular drinking games in their sample of female college student gamers were beer pong and card games (e.g., kings), whereas endurance games (e.g., power hour) were among the least popular. Despite different study methods and populations, and after looking across studies, one might tentatively conclude that team and skill games involving competition appear to be the most popular among college students.

Interestingly, preliminary work has investigated whether certain types of games may appeal to men and women differently. A study of mandated students (i.e., those referred for an alcohol infraction) found that, compared with women, a higher proportion of men participated in team and motor games (Alfonso & Deschenes, 2013). The authors suggested that men might prefer drinking games that involve competition and/or a motor task.

Differences in consumption behaviors across specific types of games—

Students' retrospective reports have shown differences in intoxication across different games. Studies have found that, compared with other kinds of games, students reported higher levels of intoxication (Zamboanga, Calvert, et al., 2007; Zamboanga et al., 2006) and more drinks consumed (LaBrie et al., 2013) when they played extreme consumption games.

Researchers have also examined consumption during drinking games using the Simulated Drinking Game Procedure (SDGP), a safe and efficient laboratory protocol for studying drinking game behaviors (Cameron, Leon, & Correia, 2011; Correia & Cameron, 2010; Silvestri, Cameron, Borsari, & Correia, 2013). In alcohol-free versions of the SDGP, students play drinking games, but water is substituted for alcohol and peak blood alcohol concentrations (BACs) are estimated by considering the amount of water consumed. Using the SDGP, Cameron et al. (2011) found that total consumption and estimated BACs were higher while playing a chance-based game compared with a physical or a mental skill-based game. The authors suggested that compared with skill-based drinking games, the characteristics of chance-based games might facilitate higher consumption and BACs.

Different contexts in which drinking games are played—College students can play drinking games in a variety of different places on or off campus (e.g., Greek houses, bars, dorm rooms; Paschall & Saltz, 2007). Polizzotto et al. (2007) found that the most commonly reported setting in which drinking games are played was a private home (65%), next were pubs (14%), and then other licensed venues (10%). Similarly, first-year college students reported being more likely to drink in gaming environments with a small gathering of friends at a private residence than contexts that would involve heckling (Anderson, Duncan, Buras, Packard, & Kennedy, 2013). Drinking games also appear to be more common at

themed parties (e.g., toga, pajama jam) than at nonthemed parties (Clapp, Ketchie et al., 2008).

Residential factors might also impact drinking games participation. A study of female students at a liberal arts college found that those who lived in a large dorm-like house, as opposed to a separate, more traditional housing unit, reported more frequent drinking games participation (Zamboanga et al., 2009). Another study indicated that students who lived with roommates on or off campus were more likely to report having played a drinking game than students who lived alone on or off campus or with family (Sharmer, 2005). Together, these studies suggest that locations that facilitate peer social interaction and connectedness (e.g., large residence halls, living with friends) might also facilitate drinking games participation.

Behavioral Factors

Drinking games participation and negative alcohol-related consequences—

Findings on the association between drinking games participation and negative drinking consequences have been mixed. On the one hand, studies have reported a positive association between drinking games participation and indices of general hazardous alcohol use, including the experience of alcohol-related consequences (e.g., Grossbard et al., 2007; Hone, Carter, & Mc-Cullough, 2013; Zamboanga et al., 2006). On the other hand, another study found that once weekly consumption of alcohol and frequency of binge drinking were accounted for, frequency of drinking games participation was no longer predictive of negative consequences (Cameron et al., 2010).

Similar discrepant findings have emerged among mandated samples. One study found that mandated students who played a drinking game on the evening of their alcohol infraction reported similar levels of negative consequences as those who did not play a drinking game (Borsari et al., 2007). In contrast, another study found that mandated students who participated in drinking games during the past month reported more negative consequences than those who did not play drinking games (Alfonso & Deschenes, 2013).

These discrepancies may be explained, in part, by the role of alcohol consumption levels in the context of frequency of drinking games participation. Using a large multisite and multiethnic college student sample, Zamboanga, Schwartz, Van Tyne, et al. (2010) found that high-frequency gamers who drank elevated amounts of alcohol while gaming reported relatively more negative alcohol-related outcomes compared with (a) high- and low-frequency gamers who consumed low amounts of alcohol while gaming, and (b) low-frequency gamers who drank high amounts of alcohol while gaming. Other research has found a positive association between the number of drinks consumed while gaming and negative alcohol-related outcomes (Sheehan, Lau-Barraco, & Linden, 2013). In short, there may be factors other than frequency of participation that can affect gamers' risk for experiencing negative alcohol-related outcomes (cf. Borsari et al., 2013).

Differences in findings may also be related to differences in measurement between studies. The self-report instruments used in these studies [i.e., Alcohol Use Disorders Identification Test (AUDIT) Saunders, Aasland, Babor, de la Fuente, & Grant, 1993; Rutgers Alcohol Problem Index (RAPI), White & Labouvie, 1989; Brief Young Adult Alcohol Consequences

Questionnaire (BYAACQ), Kahler, Strong, & Read, 2005)] ask students to report on their experience of negative consequences over a designated time period (usually weeks, months, or years) without specific reference to the alcohol-related activities preceding their occurrence. Therefore, it is unclear whether college students' reported negative drinking consequences are the direct result of drinking games participation, or if such consequences occurred because of their involvement in other risky drinking practices (e.g., pregameing, heavy episodic drinking).

Only a few studies have measured negative consequences as a direct result of drinking games participation. Qualitative results from two studies with Australian and U.S. college students have shown that many student gamers report experiencing a negative outcome (e.g., passed out, became sick) after participating in a drinking game (Polizzotto et al., 2007; Usdan et al., 2008). Another study indicated that frequency of drinking games participation and the amount of alcohol consumed while gaming is positively associated with frequency of "being in a sexual situation during or after playing drinking games that one later regretted" (Johnson & Stahl, 2004, p. 308). Among women, the amount of alcohol consumed while gaming is also positively associated with (a) frequency of engaging in a sexual behavior that one would not have participated in if not for playing a drinking game, and (b) having had sex when too drunk to give consent (Johnson & Stahl, 2004). Though limited, these few studies suggest that college students do experience negative alcohol-related consequences as a direct result of drinking games participation.

In light of these findings, it is concerning that not all students may view the negative consequences that result from heavy alcohol consumption as undesirable outcomes. The gamers that Polizzotto et al. (2007) interviewed were aware of the negative consequences associated with heavy drinking, but according to the authors, these consequences did not appear to influence students' participation in drinking games. In fact, many gamers were even "proud of their extreme intoxication and regarded many negative outcomes, such as losing consciousness or vomiting, as badges of honor" (Polizzotto et al., 2007, p. 472).

Drinking games and involvement in general risky behaviors—Researchers have begun to examine students' involvement in drinking games and its relevance to other risky behaviors. For instance, students who participate in drinking games report more involvement (albeit the differences were small, but statistically significant) in certain gambling behaviors (e.g., lottery, slot machines) than students who do not participate in drinking games (Bhullar, Simons, Joshi, & Amoroso, 2012).

Researchers have also investigated involvement in drinking games and reported risky sexual or unwanted sexual behaviors. One large multisite study found no association between unwanted sexual advances and drinking games participation among college women (Pino & Johnson-Johns, 2009). Conversely, another study found that drinking games participation was associated with an increased likelihood of safe sex discussions, and a lower likelihood of waking up unsure if one had sex with a stranger, for men and women (Simons, Lantz, Klichine, & Ascolese, 2005). In contrast to Johnson and Stahl's (2004) findings (discussed previously) that link drinking games participation with regrettable sexual behaviors among the college men and women in their sample, Simons, Lantz et al. (2005) noted that playing

drinking games may serve as a protective factor for risky sex. Perhaps the discrepancies in the findings can be attributed to differences in the study samples (e.g., gender composition; multisite sample) and the ways in which risky sexual or unwanted sexual behaviors were assessed.

Although drinking games and pregaming are said to be distinct activities (Borsari et al., 2007; Zamboanga, Schwartz, Ham, Bor-sari, & Van Tyne, 2010), research suggests that these two drinking behaviors are positively associated with each other (Haas, Smith, Kagan, & Jacob, 2012) and can occur simultaneously (e.g., Hummer, Napper, Ehret, & LaBrie, 2013; Pedersen & LaBrie, 2007; Read, Merrill, & Bytschkow, 2010). For example, one study found that approximately 44% of college students who pregame at least once in the past month reported playing drinking games while pregame (LaBrie, Hummer, Kenney, Lac, & Pedersen, 2011).

Playing drinking games while pregame can increase the likelihood that students will consume high amounts of alcohol and experience a negative drinking outcome (e.g., “blacking out”; Hummer et al., 2013; LaBrie et al., 2011). For instance, one study found that students who reported playing drinking games before private parties (but not public events such as frequenting a bar or club) also reported higher levels of alcohol consumption in these settings than those who did not play drinking games prior to arriving (Clapp, Reed, Holmes, Lange, & Voas, 2006).² Research also shows that those who typically played drinking games while pregame, versus those who did not, reported higher levels of alcohol use while pregame and experienced more negative consequences (Hummer, LaBrie, & Lac, 2011; Hummer et al., 2013). Thus, there is consistent evidence that playing drinking games as a form of pregame poses a health hazard for students.

Demographic Factors

Age—Consistent with Borsari's (2004) review, research to date suggests that younger college students tend to be at high risk for drinking games participation. For example, among students 18 to 25 years of age, 18- and 19-year-olds were 5 times more likely to participate in drinking games compared with other students (Sharmer, 2005). Similarly, younger college students report playing drinking games more often than older college students (Polizzotto et al., 2007). However, among mandated students, Alfonso and Deschenes (2013) found no significant age differences in drinking games participation during the past 30 days. Mandated students may be more homogenous with respect to their involvement in high-risk drinking activities, with age playing a less prominent role.

A retrospective report from current college students also indicates that drinking games participation is common among high school students. For example, in one study, approximately 54% of first-year college students reported playing drinking games during the last months of high school (Kenney, Hummer, & LaBrie, 2010). Prematriculation drinking has been shown to predict alcohol use among first-year college students (Hartzler & Fromme, 2003; Read, Wood, Davidoff, McLacken, & Campbell, 2002). Kenney et al.'s

²Although the findings noted in Clapp, Reed et al.'s (2006) study imply pregame activity, pregame was not the focus of their investigation.

(2010) study, for instance, found that high school gaming consumption was moderately (positively) associated with alcohol use and negative drinking consequences in college (controlling for high school and college drinking). Drinking behaviors in college may therefore be an extension of preestablished high-risk drinking behaviors, like drinking games participation, which can persist or even intensify when students arrive at college (Kenney et al., 2012).

Gender—Borsari (2004) noted that men play drinking games more frequently than women; however, they consume similar amounts of alcohol while gaming. Since Borsari's (2004) review, findings regarding gender differences in drinking games participation have been mixed. Some research suggests that college men and women are just as likely to play drinking games (Sharmer, 2005; Simons, Klichine, et al., 2005) or participate in them at similar frequencies (Grossbard et al., 2007; Pedersen & LaBrie, 2006). Other studies show higher rates of drinking games participation among men relative to women in Australian (Polizzotto et al., 2007) and U.S. (Cameron et al., 2010; Haas et al., 2012) college students. In mandated students, men are more likely than women to report overall involvement in drinking games (Alfonso & Deschenes, 2013) as well as drinking games participation on the evening of their alcohol violation (Borsari et al., 2007). It is possible that discrepant reports on the prevalence of drinking games participation among men and women are related to cultural gender differences, differences in the individual drinking cultures of the college campuses, or chance factors (e.g., proximity to a live game, boredom).

Studies also indicate that women may experience greater game-related negative consequences. Women metabolize alcohol more slowly than men; thus, even if men and women drink the same amount of alcohol while playing, women will likely achieve higher BACs (cf. Cameron et al., 2010). This has been observed in studies using the SDGP (Cameron et al., 2011; Correia & Cameron, 2010). Higher levels of intoxication mean that even when women play drinking games at the same rate as men, they may be at elevated risk for experiencing negative drinking outcomes. This hypothesis is supported by empirical research (Pedersen & LaBrie, 2006); however, reports of gender differences are not consistent across studies. Although Sheehan et al. (2013) did not specifically examine participants' rates of drinking games participation or estimated BACs while gaming, they found that the positive association between alcohol consumption while gaming and levels of alcohol-related problems were similar for both men and women.

Ethnic group membership—Samples in drinking games research have been predominately White (see Table 1), and only a few studies have examined the relevance of ethnic group membership to drinking games participation. One study showed a small positive correlation between non-White ethnicity and rates of gaming participation on prior drinking occasions (Haas et al., 2012). Conversely, another study found that White students were more likely to have played a drinking game in the past 3 months and consumed more drinks while playing than non-White students, and the association between drinking games participation and negative drinking consequences was higher among non-White students (Pedersen & LaBrie, 2006). Because they found lower rates of participation in drinking games among ethnic minorities, the authors hypothesized that ethnic minority students may

have less experience with drinking games and may therefore experience more problems when they do participate (Pedersen & LaBrie, 2006). Evidently, our understanding of the role of ethnic group membership in drinking games participation is limited. Collapsing students from various ethnic backgrounds into a monolithic group (i.e., “non-White”) may pose difficulties in meaningfully interpreting findings regarding the role of ethnicity in drinking games participation.

Athletic group membership—Compared with college nonathletes, college athletes are at increased risk for elevated alcohol consumption (for reviews, see Lisha & Sussman, 2010, and Martens, Dams-O'Connor, & Beck, 2006). Not surprisingly then, intramural and intercollegiate athletes also report higher frequency of drinking games participation than nonathletes (Grossbard et al., 2007). Research by Zamboanga, Rodriguez, and Horton (2008) suggests that the type of sports team an athlete belongs to may influence drinking games participation by making certain norms particularly salient. Although they found that over half of female student athletes reported participating in drinking games with their teammates, there were differences across teams regarding (a) the frequency of team social events that involved alcohol, and (b) the proportion of team members who reported that they played drinking games with their teammates. The number of team social events involving alcohol was a significant predictor of drinking games participation. Different teams may possess unique social norms regarding alcohol; high frequency of team social events involving alcohol can facilitate opportunities to drink and therefore increase the risk for drinking games participation.

Psychological Factors

Personality and identity—Research on personality and involvement in drinking games among college students remains sparse. In the one study we know of, Johnson and Cohen (2004) found no associations between the Big Five personality factors and students' reasons for not playing drinking games. Nevertheless, lower levels of sensation seeking were associated with higher endorsement of negative attitudes toward drinking games (e.g., drinking games are stupid, dangerous, boring, and a waste of time).

Similarly, only one study to date has examined the link between identity and involvement in drinking games. Casey and Dollinger (2007) found a positive trend in the proportion of students who reported ever having played drinking games with friends and the number of alcohol photos they used to depict their identity in an autophotography. This study suggests that an individual's sense of self may play a role in one's decision to participate in drinking games.

Social anxiety—Because of the psychological and physiological effects of alcohol (e.g., disinhibition, sedative-like effects), college students who are socially anxious might drink in order to prevent or reduce their symptoms. Drinking games may appeal to these students because they promote increased alcohol consumption in a short time period within a structured social setting that allows one to focus on the game instead of the larger social context (Ham, Zamboanga, Olthuis, Casner, & Bui, 2010). On the other hand, socially anxious students may avoid participation in drinking games, given that they occur in social

contexts. Since 2004, only one published study that we know of examined social anxiety and its relevance to drinking games participation among college students (Ham et al., 2010). Higher social anxiety was associated with less frequent drinking games participation. However, among highly socially anxious students, expectations that alcohol would reduce tension were positively associated with participation in drinking games, but they were negatively associated with drinking games participation when social anxiety was low. In addition, students low in social anxiety who expected that consumption of alcohol would make them more courageous played drinking games more frequently; the inverse was true when social anxiety was high. This study suggests that the role of social anxiety in drinking games participation must be considered in the context of individuals' expectations of the effects of alcohol.

Alcohol cognitions: Expectancies and valuations—A number of studies have examined college students' expectations about the effects of alcohol use and their relevance to drinking games participation (e.g., Haas et al., 2012; Ham et al., 2010). It appears that students' endorsement of positive alcohol expectancies is positively associated with frequency of drinking games engagement (Ham et al., 2010; Zamboanga, Schwartz, Ham, et al., 2010). Moreover, expectations that alcohol will increase sociability are associated with higher levels of perceived intoxication while playing (Ham et al., 2010). Ratings of the expected effects of alcohol as good or bad, or alcohol expectancy valuations (Zamboanga, Bean, Pietras, & Pabón, 2005; Zamboanga, Schwartz, Ham, et al., 2010), and their relevance to drinking games, are just beginning to be examined. Results from a study with female student athletes found that those who favorably evaluated the expectation that drinking would increase courageousness, and those who favorably evaluated the negative psychological and behavioral effects of alcohol (e.g., become clumsy, experience slurred speech), reported increased involvement in drinking games (Zamboanga et al., 2005). Thus students may be inclined to play drinking games if they perceive the outcomes of alcohol use favorably and expect that such outcomes will occur.

Alcohol cognitions: Reasons for playing drinking games—As highlighted in Borsari's (2004) review, college students play drinking games for a variety of reasons; these motives might be different from their drinking motives outside of the gaming context (Johnson & Sheets, 2004). College students may play drinking games for social reasons (e.g., to get to know new people), for the competition and thrill, because they think drinking games are fun, to alleviate boredom, to get drunk, to become disinhibited, to experience something new or different, to make sexual advances on someone, and/or to cope and forget about problems (Johnson & Sheets, 2004). A number of studies show that students' reasons for drinking in general (Boekeloo, Novik, & Bush, 2011) or for playing drinking games (Hone et al., 2013; Johnson & Stahl, 2004) are correlated with drinking game behaviors and outcomes. Some drinking motives are linked to more frequent gaming, such as drinking for competitive reasons (Hone et al., 2013). Other motives seem to influence alcohol consumption and levels of intoxication while gaming. For example, students who drink to get drunk (Boekeloo et al., 2011) or play drinking games to show they can hold their liquor (Hone et al., 2013) are more likely to frequently drink alcohol as part of a drinking game and consume more alcohol while gaming, respectively. Students who reported playing drinking

games for fun and celebratory reasons tended to also report high levels of inebriation when they participated in verbal (e.g., never have I ever), ping pong (e.g., beer pong), card (e.g., kings), speed (e.g., flip cup), or coin (e.g., quarters) games compared with drinking versions of board games like Monopoly or Cranium (Zamboanga, Calvert, et al., 2007). Finally, men and women who report the drinking game motive of sexual manipulation (e.g., to have sex with someone) also report high instances of sexual perpetration or victimization as a result of playing drinking games (Johnson & Stahl, 2004). Evidently, findings support the notion that drinking motives have as important an impact on drinking game behaviors as they do on other alcohol-related behaviors.

Social Factors

Distal influences—In the case of drinking games, distal social influences encompass college students' normative perceptions of (a) how much other students drink (i.e., descriptive norms), and (b) how approving other students are of alcohol use (i.e., injunctive norms; Borsari & Carey, 2001). Perceived norms have been found to be an important correlate of actual drinking game behaviors among college men. College men who estimated higher frequencies of drinking games participation among other men on their campus also reported more frequent drinking games participation themselves (Pedersen & LaBrie, 2008). College men who estimated higher alcohol drinking game consumption among other students on their campus also drank more when they played. This is particularly troubling, as college students tend to overestimate other students' drinking games behavior on their college campuses (Pedersen & LaBrie, 2008). This finding may require further investigation, however, as a recent study found that students slightly underestimated the percentage of students who play (Woodyard, Hallam, & Bentley, 2013).

In contrast, no association between perceived drinking game norms and actual drinking game behaviors was found among college women. Pedersen and LaBrie (2008) noted that drinking games have been thought of as a male-dominated activity (cf. Borsari, 2004) and that college students are greatly influenced by same-sex norms (Lewis & Neighbors, 2006). Therefore, distal norms about the prevalence of drinking games participation may be more relevant to college men. Pedersen and LaBrie (2008) suggested that gaming among college women may occur because of pressures from their friends or proximity to a live game (i.e., proximal influences) as opposed to their perceived norms.

Proximal influences—Proximal social influences on drinking game behaviors include direct offers or pressure to play (Borsari & Carey, 2001). In one study, 60% of gamers reported that other people pressured them to play drinking games and 50% reported that they (especially men) had pressured someone to play (Polizzotto et al., 2007).

Future Directions for Drinking Games Research

The past decade of drinking games research suggests many promising directions for future investigations.

Ethnicity and Cultural Considerations

Researchers have recommended that studies include participants from diverse ethnic backgrounds, as our understanding of the relevance of ethnic group membership to drinking games participation remains limited (Kenney et al., 2010; Pedersen & LaBrie, 2006). Drinking games research with diverse samples is important, given that the association between drinking games participation and negative drinking consequences appears to be stronger among non-White compared with White students (Pedersen & LaBrie, 2006). Future research should investigate how ethnic and cultural factors (e.g., acculturation) might influence (a) ethnic minority college students' decision to participate (or not participate) in drinking games, (b) how much alcohol they consume while gaming, and (c) any negative consequences they experience from gaming. It is important to note that all but one of the studies reviewed here (Polizzotto et al., 2007) investigated drinking game behaviors in U.S. samples. This limits the generalizability of the present findings to students from other countries. Given the social nature of drinking games and the significant disparities in social norms and practices across countries, particularly with regard to alcohol use, drinking game behaviors may look very different in other countries. In short, future studies should be conducted both abroad and in the United States, and should avoid, as much as possible, combining distinct ethnic/racial populations (e.g., Black, Hispanic, Asian, American Indian) into one "non-White" group.

Gender Considerations

As previously noted, findings regarding the prevalence of drinking games among men and women are mixed. Such discrepancies may be related to differences in drinking cultures on college campuses; future research could examine how gender differences might depend on the structural (e.g., commuter vs. residence campuses; rural vs. urban areas; single-sex vs. coed colleges) and cultural (e.g., party schools; salience of campus drinking traditions) characteristics of college campuses.

Psychological Considerations

Several researchers have highlighted the need to further examine personality traits and their relevance to gaming behaviors (Correia & Cameron, 2010; Johnson & Stahl, 2004; Kenney et al., 2010; Zamboanga, Schwartz, Ham et al., 2010). For instance, students with certain personality characteristics (e.g., sensation seeking, impulsivity) might be predisposed to playing certain types of games. Research examining the role of personality and social anxiety in drinking games is also limited, but suggests that social anxiety may be important when considered along with cognitive variables (i.e., reasons for drinking, alcohol expectancy outcomes and valuations).

Also warranting further consideration is the relation between drinking games participation and drinking motives. It has been argued that drinking motives serve as the final common pathway to alcohol use (Kuntsche, Knibbe, Gmel, & Engels, 2005). As such, future research should examine how motives for playing drinking games might mediate the known associations between alcohol expectancies and gaming behaviors (cf. Van Tyne, Zamboanga, Ham, Othuis, & Pole, 2012, for similar work with high school students). Similarly, researchers should test to see if students with certain personality characteristics

(e.g., sensation seeking, impulsivity) or mental health challenges (e.g., social anxiety) are inclined to endorse particular motives for playing drinking games (e.g., competition, thrills, novelty, coping), and then assess the extent to which such motives impact gaming behaviors.

Methodological Approaches to Studying Drinking Games

Many researchers have highlighted the need for longitudinal studies of drinking game behaviors (Ham et al., 2010; Hummer et al., 2011; Johnson & Stahl, 2004; Kenney et al., 2010; Zamboanga et al., 2005). Prospective studies will allow researchers to examine whether subgroups of gamers follow a specific developmental progression toward problematic (or nonproblematic) use during the transition from high school to college and through the college years, and if so, which kinds of precursors (e.g., demographic factors, alcohol cognitions, personality tendencies, social norms, mental health, involvement in other high risk behaviors) are implicated in such progressions. The use of cluster analytic techniques to (a) classify subgroups of student gamers (as well as nongamers), and (b) examine the psychological and behavioral characteristics associated with membership in a particular subgroup would also help advance the field.

There are also challenges related to the assessment of drinking game behaviors that need to be addressed. As can be seen in Table 1, researchers have largely relied on developing their own measures of frequency of drinking games participation and quantity of alcohol consumed while playing to index drinking game behaviors, or have modified existing measures that assess similar behaviors. As evidenced in this review, there are other important aspects to drinking games participation that should be considered, including participants' BAC (Cameron et al., 2011), participants' perceived tolerance (Ehret, LaBrie, & Hummer, 2012), the type of drinking games played (LaBrie et al., 2013), reasons for playing drinking games (Johnson & Sheets, 2004), and the negative consequences that result *directly* from gaming (Borsari et al., 2013). Given these nuances, the development of a standardized, comprehensive measure of drinking games involvement as well as a standardized definition of drinking games would be a very important advancement in the field (Borsari et al., 2013; Sheehan et al., 2013; Zamboanga, Horton, et al., 2007; Zamboanga et al., 2013).

The majority of existing drinking games studies have relied on aggregate data assessment (e.g., finding that participants' engagement in drinking games in the past month is related to participants' average drinking levels in the past month). To date, only a few studies have used an event-level approach to examine drinking game behaviors and consequences as they relate to specific gaming episodes (e.g., Borsari et al., 2007; Hummer et al., 2013; Pedersen & LaBrie, 2006). Advanced technologies may be particularly helpful in gathering event-level information (e.g., alcohol cognitions, consumption, BACs, consequences) prior to, during, and following specific gaming episodes. Ecological Momentary Assessment (Stone & Shiffman, 1994) and Internet-based Cell-phone-optimized Assessment Techniques (Kuntsche & Labhart, 2013) are examples of innovative data collection applications that enable participants to provide data on their current drinking behaviors, in real-time and in natural drinking environments, using cell phones or other mobile devices. The applications

have yet to be used with drinking games research, but seem to be promising avenues to pursue.

The inherent limitations of retrospective self-report studies (see Del Boca & Darkes, 2003; Leigh, 2000) warrant the continued development of experimental models, such as the SDGP (Correia & Cameron, 2010), that examine drinking game behaviors in a laboratory setting. Recent work has shown that both the alcohol and alcohol-free versions of the SDGP are safe and ecologically valid research tools (Silvestri et al., 2013). The alcohol-free version is especially well suited for investigating drinking game behaviors in underage participants; the alcohol version allows for the assessment of social behaviors (e.g., drink refusal, Silvestri et al., 2013) in the drinking game context as well as the physiological effects of alcohol. The SDGP could also be combined with observational coding systems such as the Bar Observation Social Interaction Measure (Abbey et al., 2002; Parks, Hequembourg, & Dearing, 2008), which could be used to code drinking game behaviors in a systematic manner.

Prevention and Intervention Research

In the past decade, suggestions regarding prevention and intervention of drinking games participation have included (a) providing education about the risks of drinking games (Cameron et al., 2010), especially to women (Johnson & Stahl, 2004); (b) providing normative (Cameron et al., 2010; Pedersen & LaBrie, 2008) and BAC (Silvestri et al., 2013) feedback about drinking games; (c) increasing supervision in campus housing, especially for first-year students (Sharmer, 2005); and (d) addressing drinking games in the context of existing interventions (Borsari et al., 2007; Pedersen & LaBrie, 2006; Polizzotto et al., 2007).

Despite these recommendations, only two published studies that we know of have reported the effects of alcohol intervention programming on college students' drinking game behaviors. Croom et al. (2009) conducted a randomized trial of a Web-based intervention program, *AlcoholEdu*, in a sample of incoming first-year students. Results indicated that approximately four to six weeks after arriving on campus, a lower proportion of students in the intervention group reported playing drinking games compared with those who did not receive the intervention (33.2% vs. 39.3%). Wood et al. (2010) conducted a randomized trial of a brief motivational intervention (BMI) and found that students who received the BMI, versus those who did not, were less likely to play drinking games in their first two years of college. Although these two trials suggest that alcohol intervention programming can alter students' drinking game behaviors, a move by researchers toward conducting more intervention- and prevention-based studies that examine their direct impact on college students' drinking game behaviors is much needed. It is time to translate our descriptive and theoretical understanding of students' drinking game behaviors into actionable prevention and intervention programming in order to benefit this student population.

The factors addressed in this review (characteristics of drinking games; negative drinking consequences; and behavioral, demographic, social, and psychological influences) can be incorporated into future prevention and intervention programs, such as BMIs and programs like *AlcoholEdu*, in the following ways:

- In order to fully assess the different aspects of gaming behaviors and pertinent alcohol cognitions, it might be useful to incorporate pre- and post-intervention assessments about students' personal drinking games participation, such as their frequency of play, the types of games they play, their motives for playing, and alcohol expectancies and valuations. The assessment information could be used to determine (a) the level of risk the student is at with regards to their drinking game behaviors, (b) which students would most likely benefit from additional information about drinking games, and (c) the effects of exposure to such information. Assessment of the expected outcomes of drinking games participation could also be used to inform the development of a drinking game-specific expectancy challenge intervention.
- Incorporating information about the dangers of drinking games (especially when combined with pregaming), the typical and peak amount of alcohol consumed when playing, BACs achieved while gaming, and the potential for negative consequences may also prove useful with respect to educating students about the risks associated with this activity.
- Discussion of explicit motives for playing drinking games may be helpful in determining why students continue to engage in this behavior, and in helping students develop alternative strategies for addressing their specific motives.
- Personalized feedback of perceived descriptive and injunctive norms of drinking games accompanied by actual campus-wide data on drinking games can be discussed in an effective way in individual or group formats (see Lewis & Neighbors, 2006) to correct influential normative misperceptions.
- BMI interventions can provide the context for students to explore substance-free alternatives to drinking games (e.g., Murphy et al., 2012) and protective behavioral strategies (e.g., Martens, Martin, Littlefield, Murphy, & Cimini, 2011) that students can use while gaming. Ideally, at-risk students will be able to use this information to identify that engagement in drinking games may not be consistent with their current goals and aspirations, and may reduce or cease participation as a result.

Conclusions

Drinking games remain common and problematic on college campuses. Based on our review of the drinking games research conducted over the past decade, we can conclude the following:

- Currently, there is no standard definition of drinking games; however, one conceptualization is that drinking games are a social drinking activity played according to rules that specify when and how much players drink, involve performing a cognitive and/or motor task, and are designed to promote intoxication.
- Though several models have been proposed, a widely accepted standardized method has yet to be established to classify the hundreds of different kinds of drinking games that currently exist. This is an important endeavor, because certain

types of drinking games (e.g., extreme consumption games, chance-based games) facilitate higher consumption and BACs.

- A standardized method for assessing drinking games participation and game-related consequences has yet to be established.
- Research regarding the association between drinking games participation and negative drinking consequences (as indexed by general indices of problematic use, e.g., AUDIT, RAPI, and B-YAACQ) has been mixed. However, the limited literature examining direct negative consequences resulting from drinking games suggests that involvement in this activity is related to negative drinking outcomes.
- Although drinking games and pregaming are distinct activities, evidence suggests that playing drinking games as a form of pregaming poses an increased health hazard for students.
- Younger college students tend to be at increased risk for playing drinking games. However, rates of participation do not appear to vary by age among mandated students.
- The roles that gender, ethnicity, and cultural factors play on students' drinking game behaviors remain unclear. With respect to gender, although some studies suggest that, compared with women, men are more likely to play drinking games, other studies indicate equal rates of participation and consumption. However, women may still be at increased risk for negative consequences.
- Students' endorsement of positive alcohol expectancy outcomes and favorable evaluations of positive and negative expectancy outcomes are likely to give rise to increased drinking games participation.
- College students play drinking games for many reasons (e.g., social, competition, thrill, boredom, sexual advances), many of which are correlated with drinking game behaviors and related outcomes.
- Descriptive norms appear to be an important correlate of drinking game behaviors among college men, but not among women. Research also suggests that some students report feeling pressured to play drinking games or that they had pressured someone else to play.
- It appears that *AlcoholEdu* and brief motivational intervention strategies have been found to reduce students' participation in drinking games. It is not yet known how other prevention and intervention modalities can affect college students' drinking game behaviors.

Taken together, the past decade has been one of tremendous growth in our understanding of drinking games. Now, research must increasingly turn to an investigation of ways to use our existing knowledge to reduce the prevalence of drinking games and their negative impact. There are many promising directions for intervention and for future research, the pursuit of which will continue to improve our understanding of this phenomenon among college students, and, in turn, inform prevention and intervention efforts.

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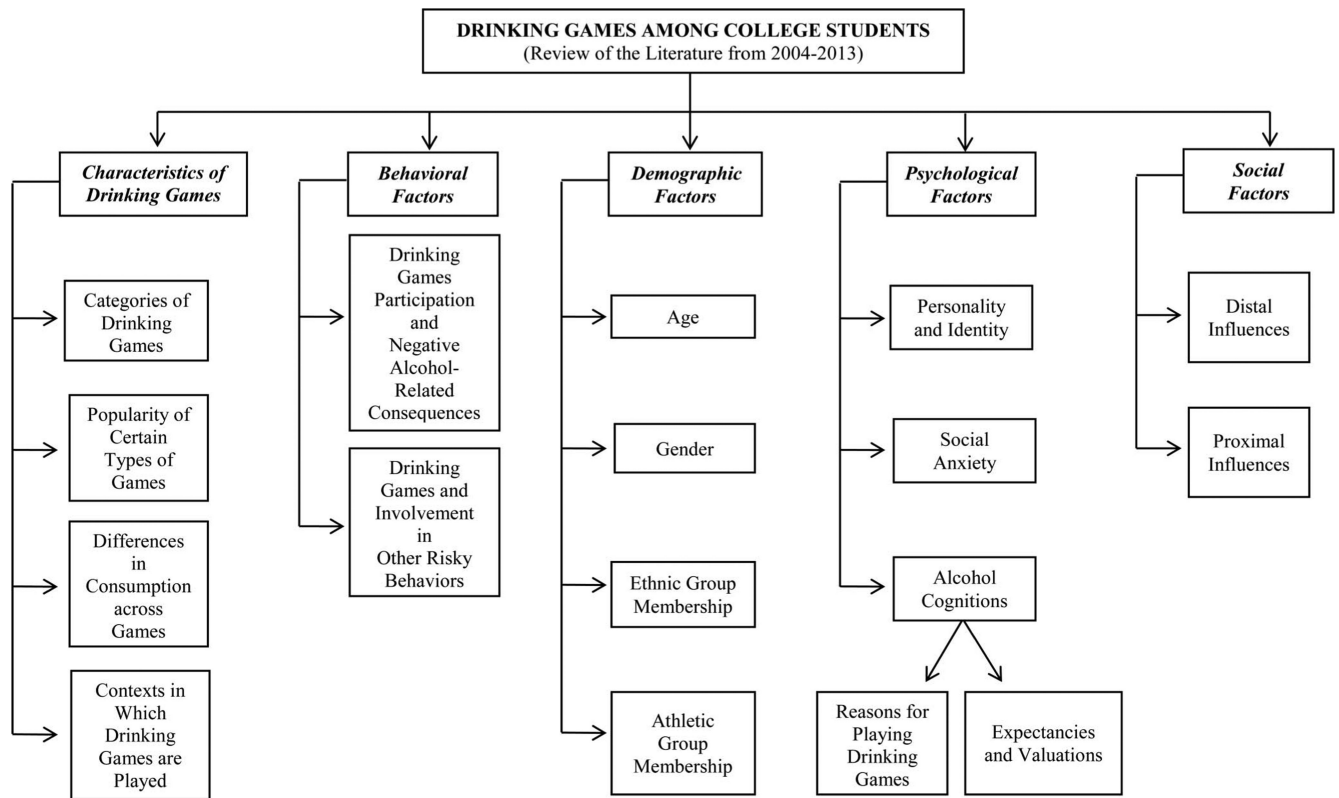
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**Figure 1.**

A conceptual overview of the current literature on drinking games among college students.

Table 1

Overview of Published Drinking Games (DGs) Research With College Students From 2004-2013

Authors	N	Study design	Site(s)	% White	% Who played	Method of assessing DGs behavior
Johnson & Cohen (2004)	147	Q	Single	DNR	DNR	Freq. of past week/month/year DG participation; # of drinks while playing
Johnson & Stahl (2004)	287	Q	Single	89% ^o	Restricted to gamers	Freq. of past month/year DG participation; # of drinks while playing
Sharmer (2005)	360	Q	Single	DNR	56% ^c men, 54% ^c women	Participation in a DG in the past month (yes/no)
Simons, Klichine, et al. (2005)	317	Q	Single	84%	65% ^d	DG participation (yes/no); # of drinks while playing
Simons, Lantz, Klichine, & Ascolese (2005)	225	Q	Single	77%	72% ^d	DG participation (yes/no); # of drinks while playing
Zamboanga et al. (2005)	187	Q	Single	DNR	DNR	Number of DG played
Clapp, Min, et al. (2006) [^]	618	NO; INT; Q	Single	75%	DNR	Presence of DG in a social drinking context; DG participation at event (yes/no)
Clapp, Reed, et al. (2006) [^]	4,964	INT; Q	Multisite	56%	Under 21 = 35% ⁿ , 21+ = 38% ⁿ	Participation in DG at most recent social event
Pedersen & LaBrie (2006)	105	Q; INT	Single	59%	64% ^d women, 57% ^d men	Freq. of past 3 month DG participation; # of drinks while playing
Zamboanga et al. (2006)	164	Q	Single	85%	Restricted to gamers	Freq. of monthly DG participation; # of drinks while playing
Borsari et al. (2007)	334	Q; INT	Single	95%	45%	Participation in DG during the night of an alcohol policy violation
Casey & Dollinger (2007) [^]	135	Q	Single	DNR	79%	Participation in DG with friends since starting college (yes/no)
Grossbard et al. (2007)	7,450	Q	Multisite	72%	49% ^e	Freq. of past year DG participation
Pedersen & LaBrie (2007)	227	Q	Single	59%	45% ^{dj} men 46% ^{dj} women	Participation in DG while pregameing in past month
Polizzotto et al. (2007) ^a	27 ^f / 256	Q; INT	Single	DNR	74% ^d	Lifetime participation in DG (yes/no); Freq. of past 6 month DG participation; # of drinks before, during, and after the game
Zamboanga, Calvert, et al. (2007)	162	Q	Single	DNR	Restricted to gamers	Intoxication level; type of beverage consumed; type of DG; duration of gaming; competitiveness
Zamboanga, Horton, et al. (2007)	332	Q	Single	DNR	52% ^e	Freq. of monthly DG participation
Clapp, Ketchie, et al. (2008) [^]	3,359 17 ^f	NO; INT; Q; FG	Single	DNR	25% risque; 13% nonrisque	Participation in DG at current social event (yes/no); presence of DG in social context
Clapp, Min, et al. (2008) [^]	1,304 ^b	NO; INT; Q	Single	DNR	32% ⁿ	Participation in DG at current social event (yes/no)
Pedersen & LaBrie (2008)	522	Q	Single	51%	64% ^d	Freq. of DG participation days in past month; # of drinks while playing

Authors	N	Study design	Site(s)	% White	% Who played	Method of assessing DGs behavior
Usdan et al. (2008)	80 ^f	FG	Multisite	58%	DNR	Students' qualitative reports of DG participation
Zamboanga, Rodriguez, & Horton (2008)	176	Q	Single	DNR	46% ^g	DG participation (yes/no) during the semester or sports season
Pino & Johnson-Johns (2009) [^]	2,254	Q	Multisite	~75%	DNR	Past month participation in DG (yes/no)
Zamboanga et al. (2009) [^]	362	Q	Single	DNR	DNR	Freq. of monthly DG participation in college and high school
Cameron et al. (2010)	133	Q	Single	DNR	52% ^c	Lifetime participation in DG (yes/no); freq. of past month DG participation; # and type of drinks while playing; duration; type of DG
Correia & Cameron (2010)	52	LBO; EXP	Single	DNR	Restricted to gamers	Estimated BAC and # of drinks consumed during simulated DG
Ham et al. (2010)	715	Q	Multisite	68%	Restricted to gamers	Freq. of monthly DG participation; level of intoxication while playing
Kenney, Hummer, & LaBrie (2010)	477	Q	Single	59%	54% ^{d h}	Freq. of DG participation days per month; # of drinks while playing; # of drinks consumed on DG occasions
Read et al. (2010) [^]	159	Q; INT	Single	89%	91% ^{d i}	Freq. of DG participation as well as in the context of pregameing in past 90 days
Zamboanga, Schwartz, Ham, et al. (2010)	1,327	Q	Multisite	57%	59% ^{d e}	Freq. of monthly DG participation
Zamboanga, Schwartz, Van Tyne, et al. (2010)	2,230	Q	Multisite	DNR	Restricted to gamers	Freq. of monthly DG participation; # of drinks while playing
Boekeloo, Novik, & Bush (2011)	307	Q	Single	69%	78% ^m	Freq. of alcohol use as part of a DG
Cameron, Leon, & Correia (2011)	92	LBO; Q; EXP	Single	DNR	Restricted to gamers	Lifetime participation in DG; freq. of past month DG participation; type and # of drinks while playing; duration and type of DG; estimated BAC and # of drinks consumed during simulated DG
Comello & Slater (2011)	105	EXP	Single	88%	Not applicable	Behavioral willingness to play DG until one became drunk in mock scenarios
Hummer, LaBrie, & Lac (2011)	568	Q	Multisite	80%	36% ^j	Participation in DG while pregameing in past 30 days
LaBrie et al. (2011) [^]	2,546	Q	Multisite	57%	44% ^{i j}	Participation in DG while pregameing in past 30 days
Ehret, LaBrie, & Hummer (2012)	3,309	Q	Multisite	56%	69% ^{c d}	Freq. of past 30 day DG participation; # of drinks while playing
Haas, Smith, Kagan, & Jacob (2012)	1,171	Q	Single	70%	DNR	Freq. of DG participation whenever one drinks
Hoepfner et al. (2012)	588	Q	Multisite	70%	71% ^d	DG participation (yes/no) in past year; # of days played in past year
Bhullar, Simons, Joshi, & Amoroso (2012)	293	Q	Single	81%	74% ^k 26% ^c	DG participation (yes/no); # of drinks while playing
Hummer, Napper, Ehret, & LaBrie (2013)	988	Q	Multisite	68%	DNR	Participation in a DG while pregameing (yes/no)

Authors	N	Study design	Site(s)	% White	% Who played	Method of assessing DGs behavior
Silvestri, Cameron, Borsari, & Correia (2013)	40	LBO; Q; EXP	Single	90%	Restricted to gamers	Freq. of DG participation/ consumption patterns; real/ estimated BAC; # of drinks consumed during simulated DG
LaBrie, Ehret, & Hummer (2013)	3,421 ^f	Q; FG	Multisite	56%	70% ^d	Freq. of DG participation days in past 30 days; type of DG played; # of drinks while playing
Anderson et al. (2013)	88 ^f	Q; FG	Multisite	78%	DNR	Willingness to accept an invitation to attend a drinking game event
Alfonso & Deschenes (2013)	154	Q	Single	82%	74% ^{c, d}	Participation in a DG in the past month (yes/no); type of DG played
Sheehan, Lau-Barraco, & Linden (2013)	368	Q	Single	59%	83% ^{d, i}	# of drinks while playing
Hone, Carter, & McCullough (2013)	698 ^l	Q	Single	DNR	DNR	Freq. of DG participation; # of drinks while playing
Woodyard, Hallam, & Bentley (2013) [^]	214	Q	Single	DNR	65%	Whether or not students participated in DG

Note. Alcohol intervention studies that included drinking games behavior as one of the outcome variables in the study were not included in this table. All studies listed are cross-sectional. In studies that utilized questionnaires and/or interviews, participants provided self-report data. Risque social events refer to highly sexualized parties (e.g., women wore undergarments only, the presence of flirtatious behaviors, sexual touching). DNR = did not report; NO = naturalistic observations; Q = questionnaire; INT = interviews; LBO = laboratory-based observations; FG = focus groups; EXP = experimental.

^a Australian college sample.

^b 89% of the participants in this study were college students.

^c At least once during the past or previous month.

^d Participants (all, if not most) reported current or prior alcohol use.

^e At least once in the past year.

^f Number of participants who were interviewed for the qualitative study.

^g Participated in drinking games during the current semester or sports season.

^h Participated in drinking games during high school.

ⁱ Some, if not all, participants consisted of pregamers.

^j Participated in drinking games while pregameing.

^k Took part in drinking games.

^l Participants reported playing drinking games at least occasionally.

^m Participants reported having drank alcohol as part of a drinking game at least once since arriving on campus.

ⁿ Sample consisted of party attendees.

^o Based on initial sample.

[^] Involvement in drinking games was included in analyses, but was not the primary study focus.